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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,139	03/01/2002	James W. Haskew	HASK-0535	4385
7590	11/26/2003			
Kenneth C. Booth Schmeiser, Olsen & Watts LLP #101 18 East University Drive Mesa, AZ 85201				
			EXAMINER MEDINA SANABRIA, MARIBEL	
			ART UNIT 1754	PAPER NUMBER
			DATE MAILED: 11/26/2003	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/087,139

Applicant(s)

HASKEW, JAMES W.

Examiner

Maribel Medina

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-66 is/are pending in the application.
- 4a) Of the above claim(s) 29-48 and 55-66 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21, 24-28 and 49-54 is/are rejected.
- 7) ☒ Claim(s) 22 and 23 is/are objected to.
- 8) ☒ Claim(s) 1-66 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,6,8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-28 and 49-54, drawn to a method for oxidizing a fuel, classified in class 431, subclass 4.
 - II. Claims 29-40 and 55-66, drawn to a catalyst, classified in class 502, subclass 325.
 - III. Claims 41-48, drawn to a fuel oxidation system, classified in class 422, subclass 171.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product (catalyst) as claimed can be used in a materially different process such as the removal of hydrocarbons, carbon monoxide and NO_x from exhaust gases.
3. Inventions I and III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process as claimed can be practiced with a materially different apparatus, such as reactor containing a fixed bed of the catalyst.

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4. Inventions II and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different modes of operations, the catalyst can be used in a different apparatus such as one containing fixed bed of the catalyst composition claimed.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification and the search required for Group I is not required for Group II; the search required for Group I is not required for Group III; and the search required for Group II is not required for Group III; restriction for examination purposes as indicated is proper.

6. During a telephone conversation with Kenneth C. Booth on 10/31/03 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-28 and 49-54. Affirmation of this election must be made by applicant in replying to this Office action. Claims 29-48 and 55-66 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

7. Claims 3 and 17 are objected to because of the following informalities:

- a. In claim 3, 1st line after "more liquids" --selected-- should be inserted.
- b. In claim 17, 2nd line "appratus" should be changed to --apparatus--

Appropriate correction is required.

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Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 8-18 and 26-28 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,419,477 (Robinson-1).

Regarding claims 1, 8, 9, 27 and 28, Robinson-1 discloses a method for oxidizing a fuel comprising providing a catalyst mixture comprising platinum, rhodium, rhenium, molybdenum, aluminum (AlCl_3) and ruthenium (See col. 2, lines 25-38 and col. 3, lines 1-16); mixing the catalyst mixture with air prior to mixing the catalyst mixture with a fuel to be oxidized; and oxidizing the fuel (See col. 3, lines 17-56). Regarding claims 10-18 and 26, Robinson-1 discloses carrying his method in combustion chambers such as the one of a diesel and gasoline engines and oil fired boilers, by exposing the air-catalyst mixture to the combustion flame (See col. 1, lines 5-41). No difference is seen between Robinson-1 disclosure and the instant claims.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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11. Claims 2-7, 19-21 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson-1 as applied to claims 1, 8-18 and 26-28 above, and further in view of US Patent No. 4,475,483 (Robinson-2).

Robinson-1 applies herein as above. Robinson discloses the instantly claimed method however fails to disclose the following:

- adding a liquid to the catalyst mixture before mixing it with the combustion air;
- wherein the liquid comprises one or more liquids from the group consisting of ethylene glycol and water;
- wherein the liquid further comprises lithium chloride; and
- the method further comprising sparging a gas through the catalyst mixture to generate fluidized catalyst particles to mix with the combustion air.

Robinson-2 is relied upon to teach a catalyst delivery method, for combustion chambers, wherein a catalyst mixture is contacted with a liquid such as ethylene glycol and water and further containing LiCl (See col. 7, lines 40-65) and sparging the liquid-catalyst mixture with air prior to inject it into the combustion chamber.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have contacted the catalyst mixture of Robinson-1 with a liquid such as ethylene glycol and water and further containing LiCl and sparging it with air as taught by Robinson-2, since Robinson-1 discloses that his catalyst can be injected into the combustion chamber by any air-flow method (See col. 3, lines 15-25), and since the air-flow method taught by Robinson-2 for injecting a catalyst mixture in a combustion chamber is method well known in the art. In

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regards to the use of ethylene glycol and LiCl, Robinson-2 clearly discloses the advantages of including these in the catalyst-air mixture (See col. 7, lines 42-col. 8, line 5).

In regards to the claim 6, Robinson-1 discloses ionizing the gaseous mixture prior to injecting it into the combustion zone (See col. 2, lines 30-38).

In regards to the limitations of claims 19-21, these would have been inherently provided once the LiCl is added to the catalyst mixture of Robinson-1.

12. Claims 49-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson-2 in view of Robinson-1.

Robinson-2 discloses a catalyst delivery method, for combustion chambers, wherein a catalyst mixture comprising rhenium is contacted with a liquid such as ethylene glycol, and water and further containing LiCl (See col. 7, lines 40-65); sparging the liquid-catalyst mixture with air prior to injecting it into the combustion chamber and oxidizing a fuel therein.

Robinson-2 fails to disclose that the catalyst comprises at least one compounds containing at least one of aluminum and magnesium.

Robinson-1 discloses a method for oxidizing a fuel comprising providing a catalyst mixture comprising platinum, rhodium, rhenium, molybdenum, aluminum (AlCl_3) and ruthenium (See col. 2, lines 25-38 and col. 3, lines 1-16); mixing the catalyst mixture with air prior to mixing it the catalyst mixture with a fuel to be oxidized; and oxidizing the fuel (See col. 3, lines 17-56).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the catalyst composition taught by Robinson-1, in the method of Robinson-2, since both references are directed to the oxidation of a fuel with catalysts containing

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at least one element in common such as rhenium. Alternatively, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added aluminum to the catalyst composition of Robinson-2, since Robinson-1 clearly discloses the advantages of including aluminum in the catalyst for oxidizing fuels (see col. 2, lines 60-68). In regards to the limitations of claims 53-54, these would have been inherently provided once the LiCl is added to the catalyst mixture of Robinson-2.

Allowable Subject Matter

13. Claims 22 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: Claims 22 and 23, the prior art fails to disclose the instantly claimed catalyst mixture composition.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maribel Medina whose telephone number is (703) 305-1928 (before 12/12/2003) or (571) 272-1355 (new telephone number starting on 12/12/2003). The examiner can normally be reached on Monday through Friday from 7:30 AM to 4:00 PM.

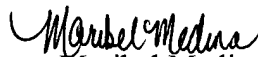
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (703) 308-3837 (before 12/12/2003) or (571) 272-1358 (new telephone number starting on 12/12/2003). The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


Maribel Medina
Examiner
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